

Volatility and Revenue Forecast Errors

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Last month, the Pew Center on the States together with the Rockefeller Institute of Government issued a report on trends in revenue forecasting, in which Oregon and its kicker law played a central role ("States' Revenue Estimating: Cracks in the Crystal Ball": [http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/State_policy/States Revenue Estimating.pdf](http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/State_policy/States_Revenue_Estimating.pdf)). Despite several references to our state, it would be dangerous to base any policy prescriptions for Oregon's tax structure or forecasting processes on the study results, given the report's cursory nature.

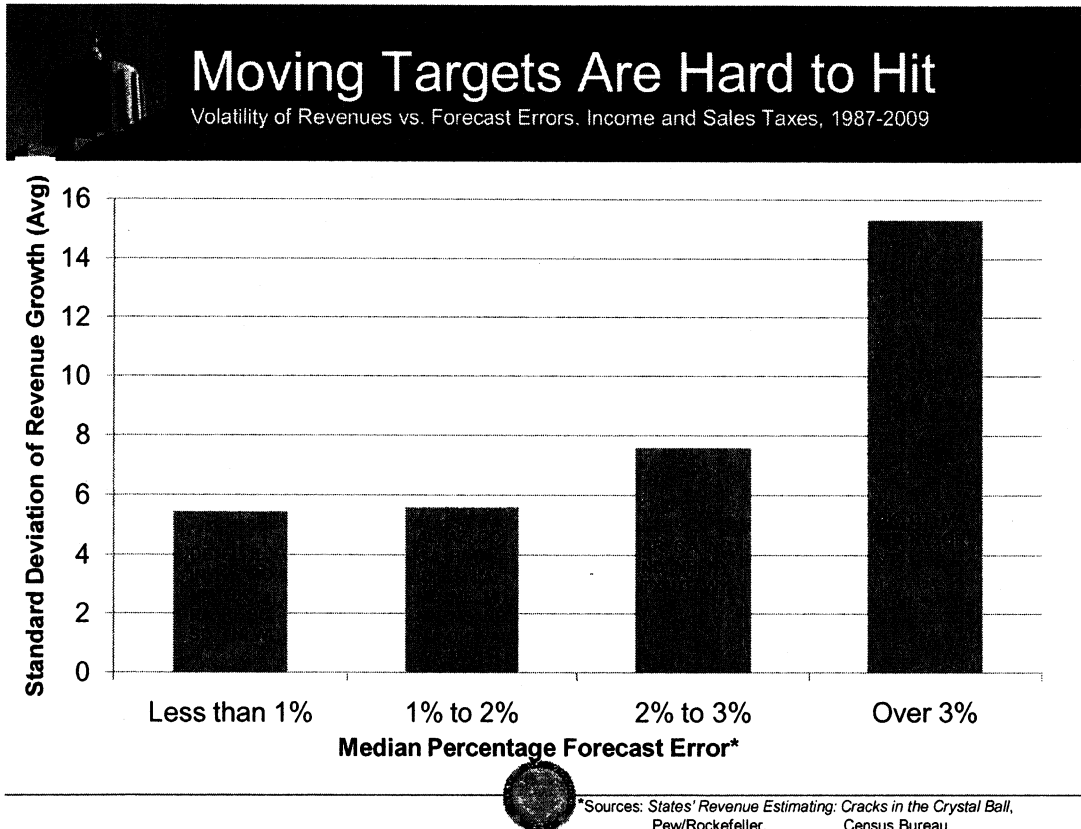
The study does very little to control for differences in state economies or revenue systems when comparing forecast methods and errors. In particular: *"To examine the methods in greater detail, we would need more complete data on them, and we would need to control for the volatility of the revenue stream"*. This statement from the study does not go nearly far enough. In order to have a meaningful discussion of forecast errors at all, one would need to control for both the size of a given state's revenue stream (as Pew does), as well as how much its revenues bounce around from year to year.

The size of the target, and the degree to which the target moves around, are both primary determinants of forecast errors. The Pew study asserts that revenues have become more volatile over time, and forecast errors more pronounced, in part because states have become more dependent on taxes derived from volatile nonwage sources of income such as capital gains. Although this is a key finding of the study, no quantitative analysis of revenue volatility is presented.

Instead, the authors include a note on revenue volatility as the last of seven caveats about the limits of the study before stating: *"Given these limitations ... we are unable to reliably compare or rank one state against another. Rather, this analysis is intended as an exploration of broad trends in revenue estimating"*. Having issued this disclaimer, the authors proceed to show a table with interstate comparisons of revenue forecasting errors, and tie the data to a series of recent anecdotes about the successes and failures of the forecasting methods employed by individual state budget officers.

It only takes a quick look at the estimates of forecast errors produced in the study to confirm that volatility of revenue streams is a major determinant of interstate

differences in forecast accuracy. All of the states for which the median absolute percentage forecast error was found to be over 3% in the Pew/Rockefeller study have revenue streams that are far more volatile than that of the typical state. For example, major revenue streams bounce around twice as much in California and Oregon as they do in New York and Illinois.

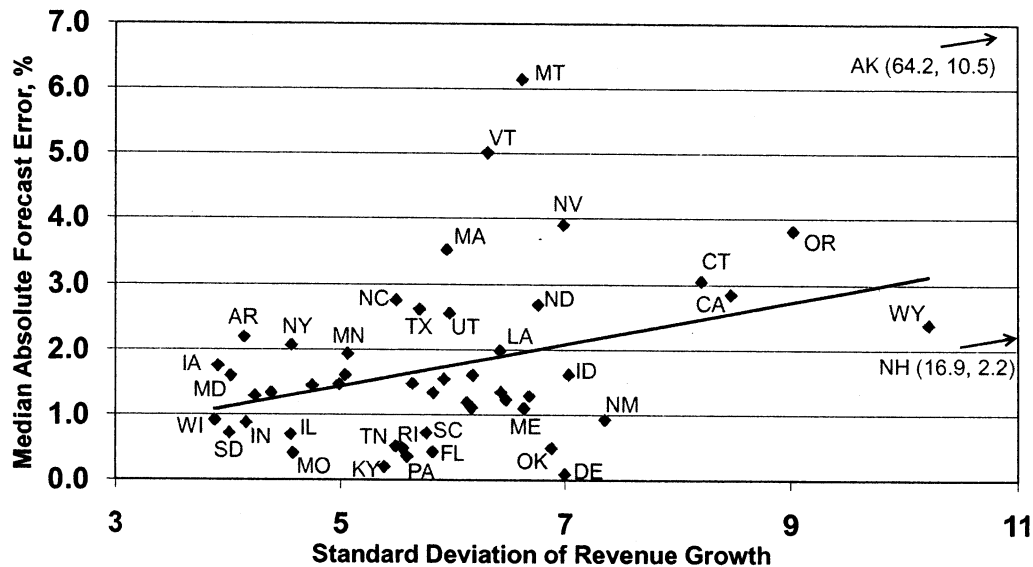


Sources of Volatility

Looking at the volatility of revenue streams across states highlights two primary causes of the fluctuations: 1) the severity of economic cycles and 2) exposure to income taxes.

Forecast Errors vs. Revenue Swings

Income and Sales Taxes, 1987-2009



Sources: "States' Revenue Estimating: Cracks in the Crystal Ball",
Pew/Rockefeller, Census Bureau

Many of the states where major revenue streams display the least volatility (and the smallest forecast errors) are farm states or old-line manufacturing hubs in the Plains or Midwest regions (IA, IL, IN, MN, MO, NE, OH, SD & WI). These regional economies have seen less pronounced recent business cycles than has the typical state since these areas have had relatively less exposure to recent macroeconomic imbalances (e.g. the technology, housing and energy booms). Similarly, traditional economies in the rural South (AL, AR, GA, KY, MS, NC & TN) have also seen smaller revenue swings than has the average state.

In addition to the severity of economic cycles, the structure of the tax system also plays a role in the volatility of revenue streams. Income tax-dependent states are often among those with the most volatile and hard-to-predict revenue streams (CA, CT, MA & OR), as are states that depend heavily on energy and mining industries (AK, LA, MT, ND, NM, OK & WY). The unique tax systems of NV and DE also display a lot of volatility, however, their revenue forecast errors are not captured well by the Pew study's

methodology, which focuses on the big three revenue sources for states (i.e. sales, personal income and corporate income taxes).

In addition to the role of volatility, states with biennial budgets are also likely to see relatively large forecast errors given their longer forecast horizon. This appears to be supported by the Pew error estimates. After adjusting for volatility, among the nine states with biennial budgets and legislatures, only Wisconsin and Maine exhibit below average forecast errors.

What Can We Do About Volatility?

Volatility of revenue streams increases uncertainty and leads to forecast errors. In a world where balanced budget requirements have teeth, forecast errors often lead to inefficiencies in the level of program funding.

Oregon's policymakers have been made painfully aware of the real world costs associated with the state's volatile economy and revenue streams. As a result, a wide range of policy measures are being promoted to better manage this volatility, including the expansion of ending balances and other budget reserves, long-range budgeting, and kicker reform.

In addition to better managing budgets in light of large revenue swings, volatility can also be reduced via reforms to the tax code that diversify the revenue base or shift tax burdens to more stable elements of the economy. However, reducing volatility and related forecasting errors are not the only factors that policymakers must consider when designing revenue systems and forecasting processes. In particular, state policymakers must weigh both risk and return when determining their tax structures. Should Alaska scrap its oil-related revenues simply because they are very volatile and difficult to predict?

A central observation in the Pew/Rockefeller study is that revenue volatility and revenue forecasting errors have increased over time as taxes have become more sensitive to business cycle conditions. It is asserted that revenues have become more closely linked to asset markets, corporate profits and other components of economic activity that are often subject to wide cyclical swings.

Why has this transformation occurred? Exposure of revenue systems to volatile components of the economy has risen largely because these volatile components of the economy have grown faster than other parts of the economy in the average year. This

trend will continue going forward. As the baby-boom population cohort ages, many workers will leave the labor market, putting downward pressure on taxable earnings. Also, households will make fewer purchases of autos, home furnishings and the other big-ticket goods that drive sales tax collections. Overall economic growth will be led by trade, business investment, and the drawing down of retiree wealth. This is a departure from recent business cycles that have been led by gains in consumer spending and the size of the labor force.

This evolution complicates the debate on tax reform. As the nature of economic growth changes, taxes on the riskiest components of the economy such as profits and capital gains are likely to continue to yield the highest returns. Further complicating any tax reform is the fact that Oregon's economy is an open one, and tax rates must be set with an eye toward the tax systems of other states. Oregon is in competition with other states to attract and retain mobile households and firms. If taxes on rapidly expanding elements of the economy are set too high, the state risks biting the hand that feeds it.

Oregon's policymakers face a difficult, but necessary, task as they reform their revenue system and budgeting processes to better weather cyclical downturns and to reflect the evolution of the regional economy over the extended horizon. To succeed at this task, policymakers must rigorously analyze the effectiveness, efficiency and fairness of Oregon's tax instruments, and not base their decisions on simple measures and statistics that are geared to grab headlines, such as those contained in the Pew/Rockefeller report.